Acquired Ichthyosis With Systemic Lupus Erythematosus: Both Dermatoses in a Single Skin Biopsy Specimen

David R. Daniel, MD; Adam I. Rubin, MD; Asher D. Rabinowitz, MD; David N. Silvers, MD; Marc E. Grossman, MD

Acquired ichthyosis (AI) in association with systemic lupus erythematosus (SLE) is a rare dermatologic finding, with only 7 previously published cases worldwide. We report a 25-year-old black woman with AI associated with SLE. A skin biopsy specimen from the lower extremity showed histologic changes consistent with both ichthyosis vulgaris and SLE, a unique finding that has not been previously reported. We also review the world literature on AI and SLE.

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Case Report

Systemic lupus erythematosus (SLE) was diagnosed in a 25-year-old black woman 2 years prior to hospital admission. She was hospitalized for acute steroid psychosis versus a primary psychotic disorder and was treated with olanzapine and divalproex sodium. Her prior medical history included iron deficiency anemia, osteoporosis, and osteomyelitis. The patient reported a new skin eruption in the lower extremity that coincided with her most recent SLE exacerbation.

Results of a physical examination revealed malar rash, oral ulcers, and diffuse alopecia. The lower extremities demonstrated bilateral ichthyosiform scaling (Figure 1). Pertinent laboratory findings included an erythrocyte sedimentation rate of 99 mm/h (reference range, 0–20 mm/h), anemia, and lymphopenia. Laboratory tests were positive for antinuclear antibodies (titer 1:2560) with a speckled pattern and anti-Sm (Smith) antibodies. The serum C3 level was within reference range and the C4 level was <10 mg/dL (reference range, 20–50 mg/dL). Results of a laboratory test for thyroid-stimulating hormone were negative. A skin biopsy specimen from the left shin demonstrated a hyperkeratotic stratum corneum with a diminished stratum granulosum (Figure 2). Colloidal iron stain revealed extensive dermal mucin deposition (Figure 3). Direct immunofluorescence was not performed.

The patient was treated for an SLE exacerbation due to malar rash, alopecia, arthritis, anemia, psychosis, hypocomplementemia, and elevated antinuclear antibody titers. She was managed with high-dose prednisone for 3 weeks and hydroxychloroquine sulfate 200 mg twice daily. The patient was treated for acquired ichthyosis (AI) with emolliation and lactic acid lotion 12% and showed improvement at follow-up examination.

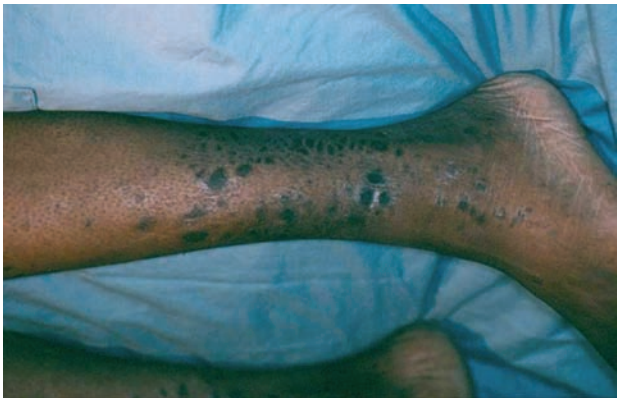

Figure 1. Discrete hyperpigmented scales of acquired ichthyosis.

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Dr. Daniel is from the Department of Medicine, Jacobi Medical Center, Bronx, New York. Dr. Rubin is from the Division of Dermatopathology, Department of Dermatology, Hospital of the University of Pennsylvania, Philadelphia. Drs. Rabinowitz and Silvers are from the Section of Dermatopathology and Dr. Grossman is from the Dermatology Consultation Service, all from the Department of Dermatology, Columbia University College of Physicians and Surgeons, New York, New York.

The authors report no conflict of interest.

Correspondence: Adam I. Rubin, MD, Division of Dermatopathology, University of Pennsylvania Health System Department of Dermatology, 3600 Spruce St, 2 Maloney Bldg, Philadelphia, PA 19104 (adamirubin@yahoo.com).

Review of Published Case Reports of Patients With Systemic Lupus Erythematosus (SLE) and Acquired Ichthyosis (AI)

Case Report	Author (Year)	Age, y; Race; Sex	Description of AI	Location of AI	Histologic Features	Treatment	Disposition of AI
1	Duvic and Jegasothy[4] (1980)	26; N/A; female	Hyperpigmented, diamond-shaped, scaly areas with fine diffuse scaling	Anterior shins, arms	Hyperkeratosis without parakeratosis, decreased granular cell layer thickness, normal dermis	Increase in prednisone dose	Resolved rapidly but recurred 5 mo later with flare-up of SLE while on tapered prednisone dose
2	Font et al[3] (1990)	31; N/A; female	Hyperpigmented, well-demarcated, scaly areas with fine diffuse scaling	Trunk, arms, thighs	Marked epidermal atrophy, hyperkeratosis with mild parakeratosis, absence of a granular layer	Addition of prednisone	Resolved after 1 mo
3	Yamada et al[9] (1990)	75; N/A; male	Pigmentation, cornification	Entire body	N/A	Prednisolone acetate	Still present at time paper was submitted
4	Labauge et al[8] (1992)	51; N/A; female	Rapidly progressive diffuse ichthyosis	Trunk, extremities	Hyperkeratotic epidermis with the absence of a granular layer, mild dermal edema	Addition of prednisolone acetate	Resolved within 2 y
5	Roger et al[7] (1993)	25; N/A; female	Hyperpigmented, well-demarcated, scaly areas with fine diffuse scaling	Trunk, arms, thighs	N/A	Pulse therapy with prednisolone acetate with continuation of cyclophosphamide	Resolved after 2 wk but recurred 1 mo later with another flare-up of SLE
6	Tlacuilo-Parra et al,[5] (2004)	30; mestizo Mexican; female	Hyperpigmented, well-demarcated, scaly areas with fine diffuse scaling	Back, arms, thighs	Epidermal atrophy, marked hyperkeratosis with decreased granular cell layer thickness, normal dermis	Increase in prednisone dose with continuation of cyclophosphamide	Resolved after 2 mo

Case Report	Author (Year)	Age, y; Race; Sex	Description of AI	Location of AI	Histologic Features	Treatment	Disposition of AI
7	Lee et al[6] (2006)	33; Korean; female	Scaly patches	Legs, arms	Epidermal atrophy, hyperkeratosis, markedly diminished granular layer	Continuation of oral prednisolone acetate and monthly pulse therapy with cyclophosphamide, addition of lactic acid lotion 12%	Resolved within 1 mo
8	Daniel et al (current report, 2008)	25; black; female	Hyperpigmented macules with scaling	Lower extremities	Hyperkeratotic stratum corneum with a diminished stratum granulosum, extensive dermal mucin deposition	Increase in prednisone dose with continuation of hydroxychloroquine sulfate and addition of lactic acid lotion 12%	Resolved within 3 wk

Abbreviation: N/A, not available.

Comment

Adult AI may be associated with malignancy, medication, and, rarely, autoimmune disease.[1] Dermatomyositis, mixed connective tissue disease, and SLE have infrequently been reported with AI. Although skin lesions are found in as many as 85% of patients with SLE, AI, which is clinically indistinguishable from ichthyosis vulgaris, is a rare cutaneous finding.[2] AI may be the only presenting cutaneous finding of SLE and may vary in intensity with the waxing and waning of the underlying disease.[3] Treating SLE usually results in improvement of AI.[4]

A comprehensive world literature search was conducted without language restriction using a PubMed/MEDLINE search of articles referenced in *Index Medicus* and revealed only 7 other cases of AI associated with SLE (Table). Five cases were published in English,[3-7] 1 in French,[8] and 1 in Japanese.[9] Our case is the only one with histologic findings of AI and SLE demonstrated in a single skin biopsy specimen. Similar to ichthyosiform sarcoidosis, with the epidermal changes of ichthyosis vulgaris and the dermal granulomas of sarcoidosis, our case had the same epidermal change and dermal mucin associated with SLE.[10]

The histologic features of AI are identical to those of ichthyosis vulgaris and include thickening of the stratum corneum and absence or thinning of the granular layer.[11] The pathogenesis of AI is unclear. Diminution of the granular layer may be caused by an abnormal host response targeted against keratohyalin granules.[5] Antiprofilaggrin antibodies are thought to connect the autoimmune nature of SLE with the development of the secondary process of AI.[5]

The primary treatment for AI associated with SLE is treatment of the underlying connective tissue

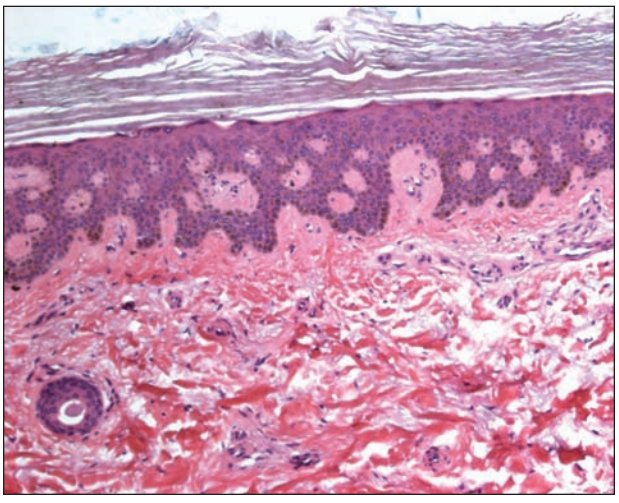

Figure 2. A skin biopsy specimen from the left shin revealed a hyperkeratotic stratum corneum with a diminished stratum granulosum and mucin deposition throughout the dermis (H&E, original magnification ×100).

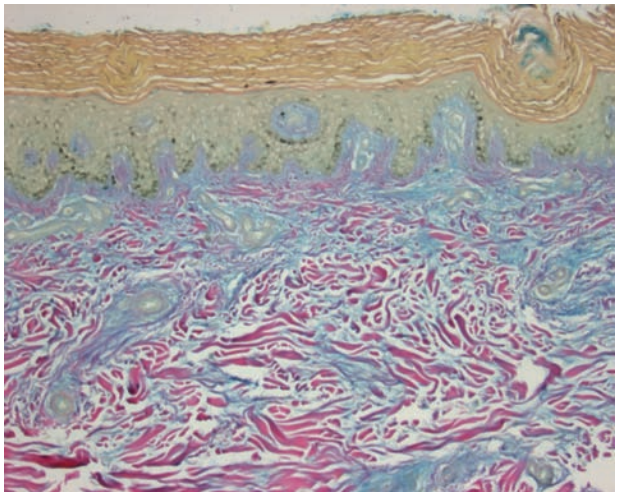

Figure 3. Extensive mucin was present in the dermis, as demonstrated by a colloidal iron stain (original magnification ×100).

disorder. Keratolytics including salicylic acid, urea, and propylene glycol also can be employed. These agents activate keratinocyte disaggregation and induce the removal of scales. Hydration with lactic acid lotion 12% promotes the disaggregation of corneocytes by increasing susceptibility to mechanical forces and increasing the release of hydrolytic enzymes.

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